

WHAT IS CLAIMED IS:

1. A composite having resistance to impact damage or wear comprising:
at least one layer of fibrous monolith material; and
at least one monolithic substrate.
- 5 2. A composite having resistance to impact damage or wear comprising:
at least one layer of fibrous monolith material; and
at least one unidirectional fibrous monolith substrate.
- 10 3. A composite having resistance to impact damage or wear comprising:
at least one layer of fibrous monolith material; and
at least one quasiisotropic fibrous monolith substrate.
4. An article of manufacture comprising a fibrous monolith construct, said
construct comprising in combination at least two layers of fibrous monolithic materials
wherein each layer is comprised of multiple cell phase and boundary phase sections
having distinct and different orientations.
- 15 5. An article of manufacture comprising in combination two layers of fibrous
monolithic material wherein each of the layers is comprised of multiple cell phases and a
boundary phase between the cell phases, and wherein the cell phases are comprised of
different materials.
- 20 6. The article of claim 5 wherein the cell phases in each layer has a distinct
and different orientation.
7. The article of claim 4 or 5 wherein the cell phases of each layer are
selected from the group consisting of metal, metal alloy, carbide, nitride, boride, oxide,
phosphate and silicide.

8. The article of claim 4 or 5 wherein the boundary phase of each layer is selected from the group consisting of metal, metal alloy, carbide, nitride, boride, oxide, phosphate and silicide.

9. The article of claim 4 or 5 wherein a first layer is comprised of uniaxial
5 cell phases.

10. The article of claim 4 or 5 wherein a first layer is comprised of equally sized cell phases and equally dimensioned boundary phases.

11. The article of claim 4 or 5 wherein a first layer is comprised of cell phases surrounded by boundary phases and also including boundary phases surrounded by cell
10 phases.

12. The article of claim 4 or 5 wherein the cell phases of each layer comprise filament having a cross-sectional area, and the cell phases of each layer have distinct and different cross-sectional area.

13. The article of claim 4 or 5 wherein the cell phases of each layer comprise
15 a filament having a cross-sectional shape, and the cell phases of each layer have a distinct and different cross-sectional shape.

14. The article of claim 4 or 5 wherein the boundary phases of each layer comprise a filament having a cross-sectional area and the boundary phases of each layer have a distinct and different cross-sectional area.

15. The article of claim 4 or 5 wherein the boundary phase of each layer
20 comprises a filament having a cross-sectional shape and the boundary phases of each layer have a distinct and different shape.

16. A composite having resistance to impact damage or wear comprising:

at least one layer of fibrous monolith material; and
at least one biaxial fibrous monolith substrate.

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